

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
Tomoyuki Takada, *et al.*
Serial No.: 10/564,791
Filed: January 13, 2006

Art Unit: 1791
Examiner: Piery, Michael T
Conf. No.: 3346

For: FOAM SHEET AND PRODUCTION PROCESS THEREOF

DECLARATION UNDER 37 CFR §1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Tomoyuki Takada, hereby declare and state that:

- 1) I am a citizen of Japan, residing at 2-3-1-817, Higashi-shinozaki, Edogawa-ku, Tokyo 133-0063 Japan.
- 2) I am one of the inventors of the subject application, and I am fully familiar with the subject matter thereof as well as the reference relied upon by the Examiner, i.e., Hiraoka *et al.* (JP2001-151834A), in the prosecution of this application.
- 3) I obtained a Master's degree from Keio University, Department of Materials Science , in March , 1994 , where I studied on cell structures developed by marangoni convection in glass thick films.
- 4) I am currently employed by Oji Paper Co., Ltd. I began working for Oji Paper Co., Ltd. in April , 1994 , where I have engaged in research and development relating to novel chemical foaming technology to manufacture thin microcellular plastic sheet with designed foaming patterns .

5) I conducted the following test in order to ascertain whether or not a foam sheet could be created in accordance with Example 21 of JP2001-151834A (Hiraoka *et al.*).

METHOD:

A diblock copolymer of polystyrene (PS) and poly-tert-butyl acrylate (PtBA) was synthesized in accordance with paragraph [0386] of JP2001-151834A (Hiraoka *et al.*). The molecular weight of each block constituting the diblock copolymer was approximately 150,000 for PS and approximately 1,000,000 for PtBA. Further, the molar fraction PS : PtBA was 84.8 : 15.2.

Then, 2 wt% of the diblock copolymer was dissolved in PGMEA. Naphtylimidyl trifluoromethane sulfonate (NAI-105 manufactured by Midori Kagaku Co., Ltd.) was added to the solution at a ratio of 1.5 wt% based on the diblock copolymer. A glass substrates was spin-coated with the solution, and then dried on a hot plate at 110°C for 3 minutes to form a film having a thickness of 0.1 μ m as Sample 1.

In the same manner, a film having a thickness of 1 μ m was formed as Positive Control 1, and a film having a thickness of 2 μ m was formed as Positive Control 2.

Each glass substrate was set to a stepper, and then the diblock copolymer film was exposed with an ultraviolet (200mJ/cm²) using a Deep UV lamp.

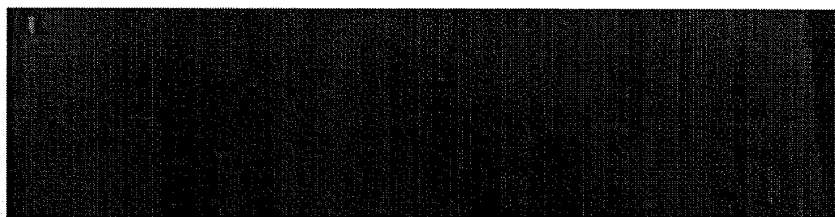
Then, each glass substrate was placed on an oven at 160°C for 1 minute.

Then, each glass substrate was placed on a black sheet and taken a photo from above.

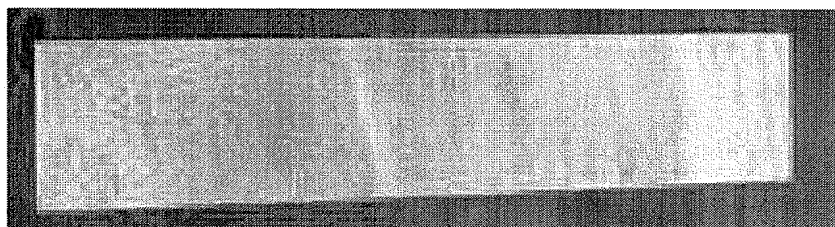
RESULTS:

As shown by the following Photograph 1, Sample 1 could not create foam. In contrast, each of Positive Controls 1 and 2 created foam and appeared as white sheet as shown by the following Photographs 2 and 3, respectively.

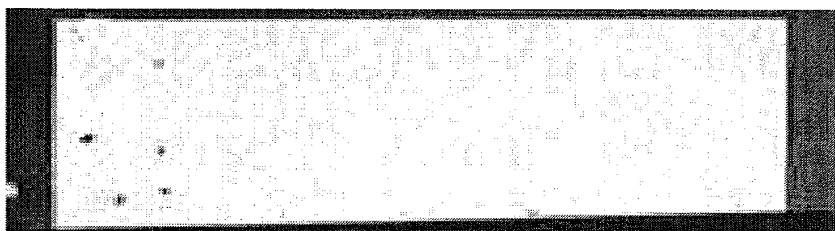
Photograph 1



Photograph 2



Photograph 3



CONCLUSION:

It has been demonstrated that the film of Hiraoka could not create foam due to the thickness thereof.

6) I fully understand the contents of this declaration.

7) I, Tomoyuki Takada, the undersigned declarant further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001, of Title 18 of the United States Code, and that

such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 3 day of April, 2009.

Tomoyuki Takada
(Tomoyuki Takada)